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Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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In the Matter of )  
 )  
Mobile Satellite-Based )  
Communications Services by )  
Crescomm Transmission Services, Inc. and )  
Qualcomm Incorporated )

RM-7912

To: The Chief, International Bureau and  
The Chief, Office of Engineering and Technology

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**COMSAT CORPORATION**  
**PETITION FOR RECONSIDERATION AND CLARIFICATION**

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## SUMMARY

COMSAT Corporation seeks reconsideration or clarification of three aspects of the *Order*.

First, the waiver of the Table of Frequency Allocations granted by the *Order* should be made available to any applicant willing to accept the same appropriate conditions. Neither the *Order* nor the record provides any basis for restricting the number of entities permitted to provide maritime wideband satellite-based services in C- and Ku-band to the two entities named in the *Order*. Allowing similarly situated entities to provide service would promote competition and serve the public interest.

Second, the Commission should clarify that applicants may demonstrate their compliance with the noninterference requirement of the *Order* in a manner that accommodates the unique nature of mobile maritime communications transmissions by shipboard terminals.

Finally, the extraterritorial aspects of the noninterference condition should be clarified. The FCC should not interfere with the jurisdiction of foreign administrations to adopt their own, and possibly different, regulations of such transmissions.

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**COMSAT CORPORATION  
PETITION FOR RECONSIDERATION AND CLARIFICATION**

COMSAT Corporation ("COMSAT"), by its COMSAT International Communications division, hereby petitions, pursuant to Section 1.106 of the Commission's Rules,<sup>1</sup> for reconsideration and clarification of the *Order* adopted on April 25, 1996, in the above-captioned proceeding.<sup>2</sup>

COMSAT urges the Commission to reconsider and clarify the *Order* in the following respects:

1. Extend the conditional waivers of the Table of Frequency Allocations for the provision of maritime mobile satellite service in the 4/6 GHz and 12/14 GHz bands to and from shipboard stations to *all* entities willing to accept the appropriate conditions;

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<sup>1</sup> 47 C.F.R. § 1.106 (1995).

<sup>2</sup> DA 96-650 (released Apr. 29, 1996).

2. Recognize that applicants may demonstrate their compliance with the noninterference requirement through means appropriate to the unique nature of maritime mobile stations; and
3. Clarify the extraterritorial scope of the noninterference requirements established by the *Order*.

## **I. BACKGROUND**

In recent years a number of entities have engaged in maritime experimental operations involving the use of C- and Ku-band fixed satellites. The purpose of these C- and Ku-band operations has been to test maritime wideband mobile communications not previously available, thereby benefitting users by expanding the range of possible services.

Among the firms conducting such operations were Crescomm Transmission Services, Inc. (a predecessor to Maritime Telecommunications Network, Inc.) and its successors), Qualcomm, PanAmSat, Fugro-Chance,<sup>3</sup> and COMSAT, through its World Systems and Mobile Communications business units. These firms have all conducted operations pursuant to a variety of special temporary authorizations (or experimental licenses), which were necessary because the Commission's rules provide for no such general service.

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<sup>3</sup> See *Fugro-Chance, Inc.*, DA 95-455 (Mar. 16, 1995) (granting waiver of Section 2.106 Table of Allocations to permit construction and operation of C-band receive-only shipboard units, using a GTE Spacenet fixed satellite).

On December 12, 1991, Crescomm commenced this proceeding by filing a petition for rulemaking. At that time, Crescomm asked the Commission to issue a notice of proposed rulemaking to establish a maritime wideband communications service using satellites licensed in the Fixed Satellite Service 4/6 and 12/14 GHz bands. In comments, COMSAT supported the petition and urged the Commission to address certain band sharing and interference issues.<sup>4</sup> Other parties expressed general support for the proposal, although some concern was raised about possible interference from shipboard terminals transmitting at 6 GHz to fixed terrestrial microwave facilities.<sup>5</sup>

Concurrently, since 1989, Qualcomm, Inc., has held special temporary authority to provide maritime mobile service using Ku-band (12/14 GHz) fixed satellite capacity.<sup>6</sup> More recently, Qualcomm filed a petition for waiver of the Table of Frequency Allocations seeking permission to provide satellite-based maritime communications in the Ku-band. The Bureau returned that application on November 9, 1995, indicating "that the use of the 12/14 GHz band would be better handled in a rulemaking proceeding."<sup>7</sup>

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<sup>4</sup> *Comments of Communications Satellite Corporation* (Apr. 10, 1992). COMSAT reiterated its support for the rulemaking two years later. See *Letter from Robert A. Mansbach to David Siddall*, RM-7912 (Jan. 25, 1994).

<sup>5</sup> See *Comments of the Bell Atlantic Companies* at 2-3 (Apr. 10, 1992); *COMSAT Comments* at 5-6.

<sup>6</sup> *Order*, n.9.

<sup>7</sup> *Id.*, n.7.

In the four and one-half years during which the Crescomm petition for rulemaking remained pending, various parties, including COMSAT, continued their experimental operations pursuant to various grants of special temporary authority, and often filed reports on their experiments. Due to the fact that the rulemaking petition to establish an appropriate service was pending, there was no reason for other interested entities, such as COMSAT, to file redundant rulemaking petitions to establish such a service. Instead, such entities obtained their own interim authorizations pending the completion of Commission action on the rulemaking petition.

In the *Order*, the agency, acting through delegated authority, took two actions. First, it denied the petition for rulemaking on the grounds that the proposed wideband maritime service was not an appropriate allocation in the C- and Ku-band spectrum. Instead, the *Order* treated the proposed maritime service as a type of mobile satellite service, and granted both Crescomm and Qualcomm<sup>8</sup> -- *but no other parties* -- conditional waivers of the Table of Frequency Allocations to provide such MSS service in Fixed Satellite Service spectrum. The *Order* made no mention of the status of other entities interested in providing such service; indeed, the text of the *Order* contains no reference either to such entities or of the legal effect of the *Order* upon them.

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<sup>8</sup> In granting a conditional waiver to Qualcomm, the *Order* reversed *sua sponte* the Commission's previous dismissal of Qualcomm's application. *Id.*, n.7. In addition, the waiver given Qualcomm applied not only to the Ku-band which Qualcomm has requested, *but also* to C-band as well. *Id.*, ¶ 14.

Second, the *Order* imposed noninterference obligations on the conditional waiver recipients. Such obligations arise because MSS is not an authorized service in the 4/6 GHz and 12/14 GHz bands; accordingly, transmitting shipboard terminals must protect authorized services from harmful interference while accepting interference from such services. To "prevent any risk of harmful interference" from shipboard MSS earth terminals to terrestrial microwave stations,<sup>9</sup> the *Order* conditioned the waiver of the Table of Frequency Allocations on a blanket prohibition on the transmission by shipboard terminals within 100 kilometers of land.<sup>10</sup> However, the *Order* also stated that if a ship can successfully "coordinate its operations with all existing fixed service station along a particular route," the FCC will not apply the 100 kilometer restriction.<sup>11</sup> Applicants are also to cooperate in establishing interference assessment and prevention procedures.<sup>12</sup>

Finally, paragraph 11 states that any Crescomm or Qualcomm MSS-equipped ship that enters the national waters of another country must "abide by any restrictions and regulations on the use of the ship earth station imposed by that country, including any necessary coordination." However, footnote 18 of the *Order* states that the 100

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<sup>9</sup> *Id.*, ¶ 11.

<sup>10</sup> *See id.*, n.18, *citing* ITU-R Recommendation, 1994 IS Series Volume, Inter-Service Sharing and Compatibility, para 5.

<sup>11</sup> *Order*, ¶ 11. The *Order* suggests that a cruise ship that always travels the same shipping lane would be able to coordinate its transmissions with all potentially affected terrestrial fixed service stations.

<sup>12</sup> *Id.*



kilometer restriction "will apply with regard to all U.S. *and foreign territories*."<sup>13</sup>

Together, these statements could be read to establish conflicting obligations on an MSS-equipped ship in the national waters of a foreign country which applies a lesser distance restriction, or no such restriction at all.

COMSAT respectfully requests that the Commission: (1) modify the granted waiver of the Table of Frequency Allocations to apply equally to any similarly situated provider of shipboard C- and Ku-band wideband maritime services that is willing to comply with all appropriate conditions; (2) clarify that applicants may demonstrate their compliance with the noninterference requirement through means appropriate to the unique characteristics of maritime mobile stations; and (3) clarify the extraterritorial scope of the interference conditions.

## **II. THE WAIVER OF THE TABLE OF FREQUENCY ALLOCATIONS SHOULD EXTEND TO ANY ENTITY WILLING TO COMPLY WITH THE APPROPRIATE CONDITIONS**

It is a fundamental precept of administrative law that an agency should treat similarly situated entities similarly. *See, e.g., Melody Music, Inc. v. Federal Communications Commission*, 345 F.2d 730 (D.C. Cir. 1965). Comsat does not object to the *Order's* grant of a waiver of the Table of Frequency Allocations to allow maritime satellite-based wideband service in the C- and Ku-bands. COMSAT does object, however, to the *Order* insofar as it limits the waiver to two named entities.

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<sup>13</sup> Emphasis supplied.

The waiver should be generally available to any entity able to comply with the appropriate conditions.

The waivers granted by the *Order* are exceptions to the Table of Frequency Allocations. "[O]nce an agency agrees to allow exceptions to a rule, it must provide a rational explanation if it later refuses to allow exceptions in cases that appear similar." *Green Country Mobilephone, Inc. v. FCC*, 765 F.2d 235, 237 (D.C. Cir. 1985).<sup>14</sup> By its terms, however, the *Order* grants exceptions to the general allocations for only Crescomm and Qualcomm. The *Order* does not address whether a waiver is equally available to similarly situated parties, such as COMSAT, which likewise have conducted maritime wideband operations in recent years.<sup>15</sup>

There is no reason not to grant COMSAT the same conditional frequency waiver. The record in the experimental operations to date establish that the shipboard terminals used in the CWS and CMC maritime satellite experiments are technically proficient. CWS and CMC are capable of coordinating their operations with terrestrial users of the bands and are willing to participate in the interference assessment and

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<sup>14</sup> An agency must offer a reason for declining to grant a waiver to entities that are not "so insubstantial as to render that denial an abuse of discretion." *Thomas Radio Co. v. FCC*, 716 F.2d 921, 924 (D.C. Cir. 1983); *Sudbrink Broadcasting, Inc. v. FCC*, 509 F.2d 218, 422 (D.C. Cir. 1974).

<sup>15</sup> The *Order* makes no attempt to distinguish Crescomm and Qualcomm from, in particular, COMSAT. The failure to even to mention such disparate treatment crosses the line from the "tolerably terse to the intolerably mute." *WAIT Radio, Inc. v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

prevention procedures endorsed by the *Order*.<sup>16</sup> That COMSAT had not filed its own petition is immaterial; the pendency of the Crescomm rulemaking petition eliminated any reason for COMSAT to file a separate request, and COMSAT has consistently supported a general resolution of this proceeding.<sup>17</sup> If maritime wideband satellite-based services are to proceed pursuant to an allocations waiver, rather than as a formal service, the waiver should be available on an equal basis to all interested entities.

For these reasons, COMSAT respectfully submits that the Commission should reconsider the *Order* and make the waiver of the Table of Allocations granted therein generally available to any entity willing to accept the appropriate conditions.

**III. THE COMMISSION SHOULD CLARIFY THAT APPLICANTS MAY DEMONSTRATE THEIR COMPLIANCE WITH THE NONINTERFERENCE REQUIREMENTS IN A MANNER APPROPRIATE TO THE UNIQUE NATURE OF MARITIME MOBILE STATIONS**

The *Order* conditioned its waivers of the Table of Frequency Allocations on, *inter alia*, compliance with a prohibition on transmissions by mobile-satellite stations operated at sea within 100 kilometers of land, unless such transmissions have successfully been coordinated with all affected terrestrial fixed service stations.<sup>18</sup>

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<sup>16</sup> *Order*, ¶ 11 & n.20.

<sup>17</sup> See *Mansbach Letter*, *supra* n.4. Indeed, the *Order* granted Qualcomm a waiver that was broader than it had requested.

<sup>18</sup> *Order*, ¶¶ 11, 13, 14.

COMSAT recognizes the necessity for maritime mobile stations, operating as a nonconforming use, to avoid harmful interference to authorized services. COMSAT merely seeks clarification that applicants may demonstrate their compliance with this requirement in a manner that recognizes and accommodates the unique characteristics of maritime mobile earth stations.

As support for the 100 kilometer restriction, the *Order* cites ITU-R Recommendation IS.847-1. That Recommendation describes a procedure for determining coordination areas of transmitting and receiving earth stations, which is used for the partial or complete updating of the procedures currently set forth in Appendix 28 of the Radio Regulations. Paragraph 5 of this Recommendation calls for a minimum value of coordination distance of 100 kilometers, even when the method for determining coordination distances leads to a result less than 100 kilometers.

The *Order's* citation to ITU-R IS.847.1 is understandable. However, the Recommendation has its origins in fixed, rather than mobile services, and the Commission's application here should take into consideration the differences between fixed and maritime mobile transmitting stations. In practice, the Recommendation's 100 kilometer distance serves merely as a "trigger" for coordination within the international regulatory standpoint. The Recommendation does *not* mean that fixed receive stations located near coastal areas at ranges *less than* 100 km from the shipboard 6 GHz transmitter cannot be protected from harmful interference. Indeed,

during COMSAT's experimental program to date, COMSAT has received no reports of harmful interference to terrestrial facilities at any distance.

Neither the Radio Regulations nor the ITU-R Recommendations have developed, as yet, actual sharing criteria between stations of the fixed service and maritime mobile earth stations using satellites in the fixed service. Nevertheless, a number of techniques are available regarding sharing, developed within the ITU-R and other fora, that encompass all conditions, constraints, and technical assumptions that together can ensure that unacceptable interference to fixed service stations can be avoided. These techniques may be employed in a far less burdensome manner than the coordination procedures that more typically apply in the context of fixed transmitting stations.

In the case of ships at sea, the two most important modes of interference to consider are: (1) *sidelobe-to-sidelobe* and (2) *sidelobe-to-mainlobe*.<sup>19</sup> The sidelobe-to-sidelobe mode produces interference at a terrestrial station through the side or back radiation lobes of its antenna while a ship passes near the coast (but the ship main lobe is not pointing at the fixed station). Such interference would be temporary, but likely would be of sufficient duration that it could not be classified as short-term and should be avoided. In practice, however, this mode of interference typically will result in

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<sup>19</sup> COMSAT believes the probability of a shipboard station causing interference to a fixed service receive station is extremely unlikely, due to the difference in alignment of the satellite with the fixed service station on land and the elevation angle of the ship's earth station.

practical safe distances of less than 100 km, because of the movement and angle of the shipboard terminal.

The sidelobe-to-mainlobe mode occurs when a shipboard mobile earth station produces interference at a terrestrial fixed service station through the MSS side or back lobe as it traverses a terrestrial receiving station's antenna main beam azimuth. This generally will be a truly short-term interference because, near a coast, a ship's passage will tend to be at right angles to a terrestrial station's main beam direction and its duration consequently will be brief. The required "safe" distance can vary considerably in this situation, and will vary as a ship travels along a coast.

Analyses developed for these two types of interference could, as a practical matter, result in separation distances less than 100 km, especially in the sidelobe-to-sidelobe situation. It should be possible to determine, at least for all U.S.-based fixed links along coastal areas and U.S. territories, the number of fixed stations having a zone of sensitivity extending significantly beyond the coast. Using this information, a ship could put in place suitable control arrangements such as temporary cessation of emissions or a change of transmit frequency to protect any affected terrestrial links.

The Commission should allow applicants to use the above-described protection procedures in order to demonstrate compliance with the noninterference condition for any mobile ship station transmitting at 6 GHz within 100 km of land. This would provide applicants with an appropriate means of accommodating the legitimate need to

protect terrestrial stations from interference without overly burdening maritime applicants.

#### **IV. THE COMMISSION SHOULD CLARIFY THE EXTRATERRITORIAL SCOPE OF THE NONINTERFERENCE CONDITION**

The *Order* contains contradictory guidance regarding an operator's duty to comply with the 100 kilometer zone restriction outside of U.S. waters. This is of particular interest both to cruise ships (which regularly ply the Caribbean Sea and Canadian waters) and, of course, to the U.S. Navy.

Paragraph 11 of the *Order* imposes a blanket restriction on 6 GHz transmissions by shipboard terminals within 100 kilometers of land. Footnote 18 states that this restriction will apply "with regard to all U.S. and foreign territories." However, Paragraph 11 *also* states that any Crescomm or Qualcomm-equipped ship that enters the national waters of another country must abide by any restrictions imposed by that country. These provisions could be read to give rise to an inconsistency if the foreign nation imposes no restriction on such transmissions.

Where a foreign nation has seen no reason to restrict 6 GHz shipboard transmissions, there is no obvious reason why the United States can or should impose an extraterritorial restriction of this nature. COMSAT urges the Commission to clarify that this requirement applies only in the United States and U.S. foreign territories.

## V. CONCLUSION

For the foregoing reasons, COMSAT Corporation respectfully requests the Commission (1) to make generally available the waiver of the Table of Frequency Allocations for wideband maritime mobile satellite communications to any party willing to accept the appropriate conditions; (2) to clarify that applicants may establish their compliance with the noninterference obligation in a manner that accommodates the unique nature of maritime mobile communications; and (3) to clarify the extraterritorial scope of the interference condition.

Respectfully submitted,

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